What is claimed is:

1. A semiconductor device having a MEMS, comprising:

a semiconductor substrate on which an integrated circuit is formed; and

a plurality of units which are formed on said semiconductor substrate and comprise movable portions that physically move on the basis of a first electrical signal,

each of said units comprising at least

a control electrode which supplies a control signal for causing the movable portion to physically move,

a driving circuit which outputs the control signal to the control electrode on the basis of the first electrical signal,

a sensor electrode which detects physical motion of the movable portion,

a sensor circuit which generates a second electrical signal corresponding to physical motion of the movable portion on the basis of a signal from the sensor electrode,

a memory which holds an externally input setting value, and

a processor which generates the first electrical signal on the basis of the setting value held

in the memory, and controls output of the control signal from the driving circuit on the basis of the generated first electrical signal and the second electrical signal, thereby controlling operation of the movable portion,

wherein the driving circuit, the sensor circuit, the memory, and the processor are constituted by part of the integrated circuit.

2. A device according to claim 1, wherein

the movable portion includes a mirror which is rotatably coupled to a mirror substrate,

the mirror substrate is supported by a support member which is formed from a conductive material on said semiconductor substrate via an interlayer dielectric layer,

the control electrode and the sensor electrode are arranged on the interlayer dielectric layer below the mirror so as to be insulated from the support member, and

the mirror is arranged at a predetermined distance above the control electrode and the sensor electrode.

3. A device according to claim 2, wherein the sensor electrode is arranged outside the control electrode in a region below the mirror.

4. A device according to claim 2, wherein the control electrode is arranged outside the sensor electrode in a region below the mirror.

5. A device according to claim 2, further comprising an insulating resin protective film which covers an upper surface of the control electrode.

6. A device according to claim 2, further comprising an insulating resin protective film which covers an upper surface of the sensor electrode.

7. A method of manufacturing a semiconductor device having a MEMS, comprising the steps of:

forming an integrated circuit including a processor, a memory, a driving circuit, and a sensor circuit on a semiconductor substrate;

forming an interlayer dielectric layer on the semiconductor substrate;

forming in a plurality of unit regions on the interlayer dielectric layer a plurality of control electrodes and a plurality of sensor electrodes which are insulated from each other;

forming a support member from a conductive material on the interlayer dielectric layer so as to become higher than the control electrode;

preparing a mirror substrate which comprises mirrors in a plurality of opening regions and is formed from a conductive material, the mirrors being pivotally coupled to the mirror substrate via coupling portions; and

connecting and fixing the mirror substrate onto the support member to arrange the mirrors of the mirror substrate at an interval above the control electrodes and the sensor electrodes which are formed for the plurality of units,

wherein the control electrodes are electrically connected to the driving circuit so as to receive a signal from the driving circuit, and

the sensor electrodes are electrically connected to the sensor circuit so as to output a signal to the sensor circuit.

8. A method according to claim 7, wherein before the mirror substrate is connected and fixed onto the support member, a predetermined resin pattern is formed by stencil printing to form a protective film which covers at least top of the control electrode.

9. A method according to claim 7, wherein before the mirror substrate is connected and fixed onto the support member,

a photosensitive resin pattern which covers

the control electrode is formed by stencil printing, and the resin pattern is patterned by photolithography to form a protective film which covers at least top of the control electrode.

10. A method of manufacturing a semiconductor device having a MEMS, comprising at least the steps of:

forming an integrated circuit including a processor, a memory, a driving circuit, and a sensor circuit on a semiconductor substrate;

forming an interlayer dielectric layer on the semiconductor substrate;

forming in a plurality of unit regions on the interlayer dielectric layer a plurality of control electrodes and a plurality of sensor electrodes which are insulated from each other;

forming a support member from a conductive material on the semiconductor substrate via an insulating film so as to become higher than the control electrode;

forming a mirror substrate from a conductive material on the support member while holding a space above the control electrodes and the sensor electrodes; and

forming, in the plurality of unit regions, opening regions which pass through the mirror substrate, and forming, in the opening regions, mirrors which are

pivotally coupled to the mirror substrate via coupling portions,

wherein the mirrors formed on the mirror substrate in the unit regions are arranged at an interval above the control electrodes and the sensor electrodes,

the control electrodes are electrically connected to the driving circuit so as to receive a signal from the driving circuit, and

the sensor electrodes are electrically connected to the sensor circuit so as to output a signal to the sensor circuit.

11. A method of manufacturing a semiconductor device having a MEMS, comprising the steps of:

forming an integrated circuit including a processor, a memory, a driving circuit, and a sensor circuit on a semiconductor substrate;

forming on the semiconductor substrate an interlayer dielectric layer which covers the integrated circuit;

forming a seed layer on the interlayer dielectric layer;

forming on the seed layer a first sacrificial pattern having openings in a first region, a plurality of second regions, and a plurality of third regions;

forming on the seed layer exposed in the

first, second, and third regions a first metal pattern substantially equal in film thickness to the first sacrificial pattern by plating, and a second metal pattern and a third metal pattern not larger in film thickness than the first metal pattern;

after forming the first, second, and third metal patterns into predetermined film thicknesses, forming on the first sacrificial pattern and the second and third metal patterns a second sacrificial pattern having an opening in a fourth region on the first metal pattern;

forming a fourth metal pattern substantially equal in film thickness to the second sacrificial pattern by plating on a surface of the first metal pattern that is exposed in the fourth region;

after forming the fourth metal pattern into a predetermined film thickness, removing the first and second sacrificial patterns;

after removing the sacrificial patterns, selectively removing the seed layer by using the first, second, and third metal patterns as a mask, thereby forming a support member from a layered structure of the first and fourth metal patterns, a plurality of control electrodes which are formed from the plurality of second metal patterns and separated from each other on the interlayer dielectric layer, and a plurality of sensor electrodes which are formed from the plurality of third

metal patterns and separated from each other on the interlayer dielectric layer;

preparing a mirror substrate which comprises mirrors in a plurality of opening regions and is formed from a conductive material, the mirrors being pivotally coupled to the mirror substrate via coupling portions; and

connecting and fixing the mirror substrate onto the support member to arrange the mirrors of the mirror substrate at an interval above the control electrodes and the sensor electrodes,

wherein the control electrodes are electrically connected to the driving circuit so as to receive a signal from the driving circuit, and

the sensor electrodes are electrically connected to the sensor circuit so as to output a signal to the sensor circuit.

12. A method according to claim 11, wherein before the mirror substrate is connected and fixed onto the support member, a predetermined resin pattern is formed by stencil printing to form a protective film which covers at least top of the control electrode.

13. A method according to claim 11, wherein before the mirror substrate is connected and fixed onto the support member,

a photosensitive resin pattern which covers the control electrode is formed by stencil printing, and

the resin pattern is patterned by photolithography to form a protective film which covers at least top of the control electrode.

14. A method of manufacturing a semiconductor device having a MEMS, comprising the steps of:

forming an integrated circuit including a processor, a memory, a driving circuit, and a sensor circuit on a semiconductor substrate;

forming on the semiconductor substrate an interlayer dielectric layer which covers the integrated circuit;

forming a seed layer on the interlayer dielectric layer;

forming on the seed layer a first sacrificial pattern having openings in a first region, a plurality of second regions, and a plurality of third regions;

forming on the seed layer exposed in the first, second, and third regions a first metal pattern substantially equal in film thickness to the first sacrificial pattern by plating, and a second metal pattern and a third metal pattern not larger in film thickness than the first metal pattern;

after forming the first, second, and third metal patterns into predetermined film thicknesses,

forming on the first sacrificial pattern and the second and third metal patterns a second sacrificial pattern having an opening in a fourth region on the first metal pattern;

forming a fourth metal pattern substantially equal in film thickness to the second sacrificial pattern by plating on a surface of the first metal pattern that is exposed in the fourth region;

after forming the fourth metal pattern into a predetermined film thickness, forming on the second sacrificial pattern a mirror substrate which is electrically connected to the fourth metal pattern and formed from a conductive material;

forming a through hole in the mirror substrate, and forming in a plurality of predetermined regions of the mirror substrate a plurality of mirrors which are pivotally coupled to the mirror substrate via coupling portions;

removing the first and second sacrificial patterns via the through hole formed in the mirror substrate; and

after removing the sacrificial patterns, selectively removing the seed layer via the through hole by using the first, second, and third metal patterns as a mask, thereby forming a support member from a layered structure of the first and fourth metal patterns, a plurality of control electrodes which are formed from

the plurality of second metal patterns and separated from each other on the interlayer dielectric layer, and a plurality of sensor electrodes which are formed from the plurality of third metal patterns and separated from each other on the interlayer dielectric layer,

wherein the mirrors formed on the mirror substrate are arranged at an interval above the control electrodes and the sensor electrodes,

the control electrodes are electrically connected to the driving circuit so as to receive a signal from the driving circuit, and

the sensor electrodes are electrically connected to the sensor circuit so as to output a signal to the sensor circuit.